

COMPACT Air & Heat



COMPACT Air



COMPACT Heat

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Quick and Simple Installation, Effective and Economic Ventilation!

Complete Room Units

The COMPACT Air and COMPACT Heat units are complete air handling units that can be installed directly in the room to be ventilated. The COMPACT Air and COMPACT Heat units are designed for comfort ventilation and can be used in classrooms, day nurseries, conference halls, smaller offices, workrooms, shops, restaurants and similar public premises.

The ducts for outdoor air and exhaust air should be connected to the top of the unit and should be arranged to lead out through the wall. Other than that, you need only connect the unit to the mains electric supply. The installation work can be carried out very quickly and easily and if the task of cutting openings through the wall is not complicated, the unit can be operational in just a few hours. It is also simple to relocate the air handling unit if the nature of the activities conducted in the room changes.

The ventilation is very effective thanks to the displacement air ventilation method used. The built-in control equipment has several functions for economical operation.

The difference between the COMPACT Air and the COMPACT Heat units is that the COMPACT Heat units can also be used for heating. See next page!

The air distribution pattern is easily adjustable.

The built-in, low-velocity air diffuser in the COMPACT Air and COMPACT Heat units is equipped with unique VARIZON®discs for the highest degree of comfort and optimum operation.

VARIZON®discs operate as air deflectors and can be individually set without altering the airflow, pressure drop or level of flow generated sound. The near zone can thus be adapted for each individual case.



Strong Reasons Why You Should Choose COMPACT Air/Heat

Simple Installation

The units can be installed quickly and easily and this involves minimal strain on the business operations while the refurbishment is in progress. The only work required involves cutting the openings in the external wall for the outdoor air and exhaust air ducts as well as connecting the unit to the mains electric supply.

Optimal Operating Economy

The COMPACT Air and COMPACT Heat units achieve optimal operating economy thanks to their energy-saving fans, effective heat recovery and complete control of temperatures, airflows and in-operation periods as well as economic control functions.

Economical Control Functions

A large number of functions integrated into the control system are ready to be activated and several of them offer unique opportunities for saving energy. The air handling units are ready to be connected to most existing supervisory systems. Communication can also take place directly in a network via an ordinary web browser.

Effective Ventilation

The displacement air ventilation principle used provides effective ventilation and the air distribution pattern can be adjusted for optimum comfort and operation.

COMPACT Air and COMPACT Heat Have That Little Extra!

Introducing the new COMPACT series, Swegon offers air handling units for small air volumes without having to reduce its standards of performance, energy efficiency, control functionality and communications multiplicity.

Energy-efficient Fans

The fans in the COMPACT series are direct-driven plug fans. They are equipped with EC motors that provide high efficiency across the entire operating range.

The fans are compact and take up little space. Sharp duct bends can be connected directly to the fan outlet without pressure losses. The fans also generate low noise levels.

Heat Exchanger with High Efficiency

All of the units in the COMPACT series are equipped with the RECOeconomic rotary heat exchanger, one of the most efficient heat exchangers on the market.

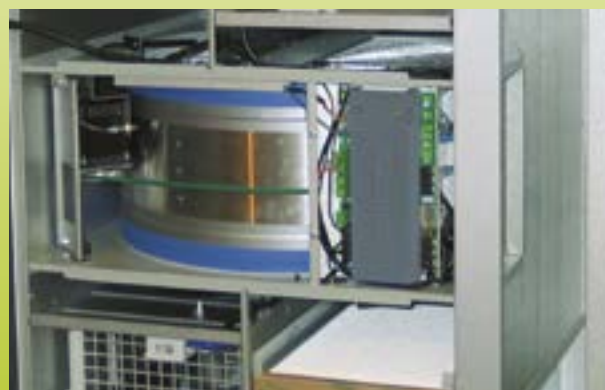
The temperature efficiency of the RECOeconomic is high, up to 85%, and the pressure drop across it is low. The heat exchanger is driven by a step motor that permits extremely high precision for controlling the rotor speed and heat recovery efficiency as well.

Compact Filters

The air handling units are equipped with Class F7 so-called pleated filters for both the supply air and the extract air. A filter monitoring function is integrated into the control system.



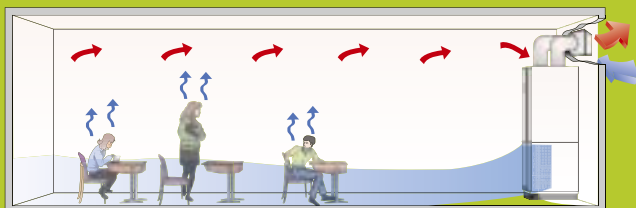
Energy-efficient Fans



Efficient RECOeconomic heat exchanger

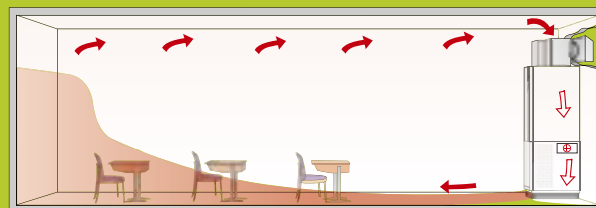
Optimal Comfort and Operating Economy

Normal Operation



In normal applications, the COMPACT Air and COMPACT Heat provide effective displacement ventilation. The slightly cooler supply air is discharged to flow along the floor and rises around heat sources, such as the occupants.

Heating with COMPACT Heat



COMPACT Heat enables you to heat the room when it is not being used. If heating is required, the room air is circulated through a powerful air heater.

The IQnomic Control System – An Intelligent Economist on which You Can Always Rely!

Complete Control System

The IQnomic control system controls and regulates fans, heat exchanger, temperatures, airflows and in-operation periods. Every conceivable function for an air handling unit has been integrated into the system and is ready to activate.

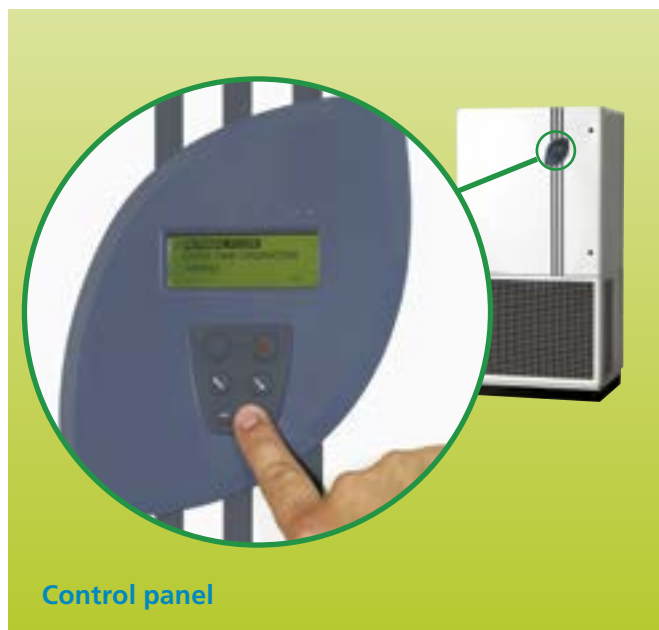
All the settings and readings can be entered/viewed in plain text and in the language of your choice via a user-friendly control panel on the inspection door.

The fact that the control equipment is integrated into and specifically developed for the COMPACT ensures that its electronics and mechanics operate hand in hand.

Smart and Economical Control Functions

Typical smart and economical control functions available only in the IQnomic from Swegon:

- **ERS Regulation (control).** Can be used when the rooms served have excess heat. In most applications, no reheating coil is needed.
- **Density-corrected airflow.** Automatically takes into consideration how the air density varies and accordingly provides different air volume at different temperatures.
- **Seasonally compensated airflow.** The airflow can be reduced in the winter according to a preset performance curve.
- **Summer night cooling.** An energy-saving function for supplying cool outdoor air to the rooms at night.
- **Cooling energy recovery.** The heat exchanger is also automatically utilised for recovering the relative cooling energy that may be available in the room.



Control panel



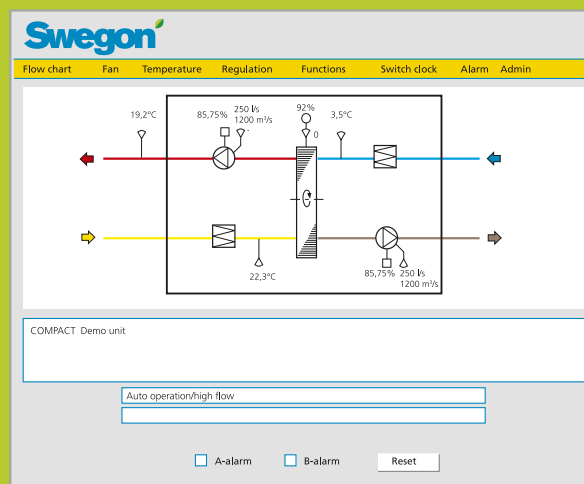
IQnomic

Communication Is Standard

Communication via TCP/IP and EIA 485 are included as standard. The TBLZ Communication unit is used for communication via LON and Trend.

The COMPACT also has built-in web communication. Communication with the COMPACT can be established via an ordinary web browser (such as Internet Explorer) and your own network, i.e. without any main control systems whatever.

In addition to the above, the COMPACT units have inputs and outputs for external functions such as the forwarding of alarms or overtime operation via keyed entries.



Technical Description of the COMPACT Air & Heat Units

General

The COMPACT Air and COMPACT Heat units are complete air handling units in two sizes with direct-driven supply air and extract air fans, supply air and extract air filters, rotary heat exchanger, silencer, built-in, low-velocity air diffuser and built-in control equipment. The two sizes have the same physical dimensions but different airflow capacity.

COMPACT Heat

The Compact Heat units are designed for both the reheating of supply air and for being able to heat an unoccupied room.

Effective Ventilation

The air handling units provide very effective ventilation thanks to the displacement air ventilation principle used. The built-in control equipment has several functions for economic operation.

Built-in Control Equipment

The COMPACT Air and COMPACT Heat units have built-in control equipment that can be operated from a fixed control panel secured to the inspection door. The electrical and control system is completely integrated into the air handling unit. The microprocessor-based equipment controls and regulates temperatures, airflows and other functions. A large number of functions are built into the system and are simple to activate.

Attractive Design

The COMPACT Air and COMPACT Heat units have an attractive and elegant design that fits in well in various décor.

Range of application

The COMPACT Air and COMPACT Heat units are designed for comfort ventilation and can be used in classrooms, day nurseries, conference halls, smaller offices, workrooms, shops, restaurants and similar public premises.

The COMPACT is designed and tested for ambient temperatures from -25°C to +40°C, and temperatures in the air stream from -40°C to +40°C.

The difference between the COMPACT Air and the COMPACT Heat units is that the COMPACT Heat units can also be used for heating.

Simple Installation

The air handling unit is installed directly in the room that is to be ventilated. The ducts for outdoor air and exhaust air should be connected to the top of the unit, insulated and run out through the wall. Other than that, you need only connect the unit to the mains electric supply. To facilitate its transport within the site, the unit can be split into an upper section and a lower section.

Certification

Swegon AB has a certified Quality Assurance System that conforms to ISO 9001 Standard and a certified Environmental Management System to ISO 14001.



COMPACT Air



COMPACT Heat

Technical Description of the COMPACT Air & Heat Units

Mechanical Design

Casing

The room unit casing has an outer skin of galvanized sheet steel that has been prepainted in a shade of white (NCS S 0502-G), and has an inner skin of aluminium-zinc plated sheet steel. The exterior surfaces of the room unit conform to Environmental Class C4. The casing has 30 mm thick mineral wool insulation; the inspection door has 50 mm thick insulation.

The inspection door is hung on hinges secured to the left-hand edge. The door can be opened and closed using a special key. A lockable door lock is available as an accessory.

Fans

The fans are direct-driven plug fans. They are equipped with EC motors that provide high efficiency across the entire operating range. Flow measurement and control are standard.

The fans are equipped with a protective screen and they are effectively vibration-isolated from the casing. They can be dismantled and removed from the air handling unit if required.

Heat Exchanger

The rotary heat exchanger is of RECOeconomic type, patented by Swegon. The heat exchanger is driven by a step motor that controls the rotor speed with high precision and also controls the heat recovery efficiency. The rotation monitor and controls are standard.

The heat exchanger is fitted with safety guards.

Filters

The air handling unit has pleated Class F7 filters for both the supply air and the extract air. Filter monitoring is standard.

COMPACT Heat

The COMPACT Heat units are also equipped with low air discharge outlets, change-over damper, and an electric air heater (7.5 kW). The recirculation section, louvre damper and external room sensor are also included for installation at the building site.

Environmental Product Declaration

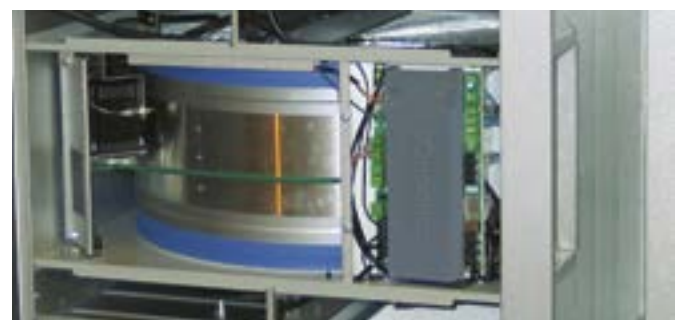
Swegon AB has a certified environmental management system that conforms to ISO 14001 Standard and is registered on the REPA Register, no. 5560778465.

The COMPACT units are made of the following materials:

Type of Material	Percentage of total weight
Sheet steel	Approx. 84%
Aluminium	Approx. 4%
Polymeric material	Approx. 1%
Mineral wool insulation	Approx. 6%
Filter	Approx. 1%
Electronic equipment, motors	Approx. 4%



Direct-driven fans with EC motors.



RECOeconomic rotary heat exchanger.

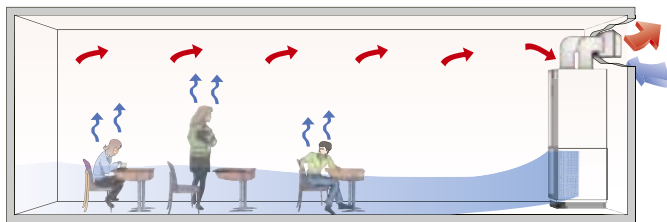


Pleated Class F7 filter.

Technical Description of the COMPACT Air & Heat Units

How the Unit Operates

Normal Operation

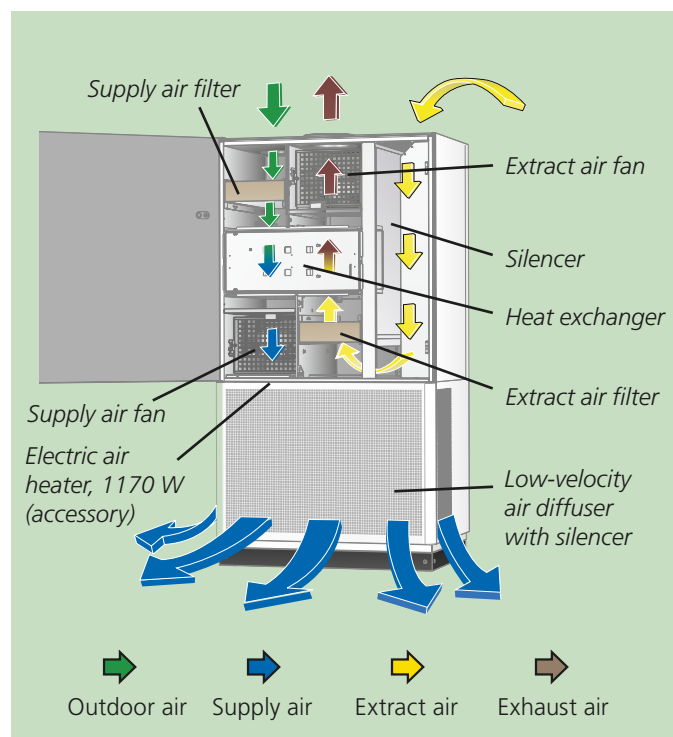


Outdoor air is conveyed via the duct into the unit where it passes through the filter and heat exchanger.

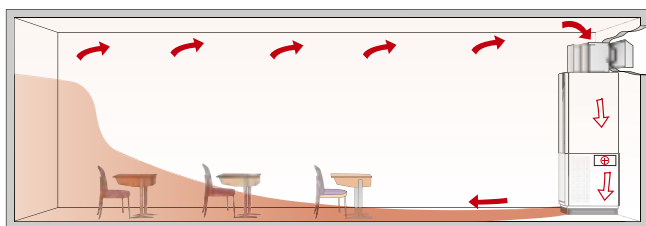
If required, the air can be reheated by an electric heater for 1170 Watt output (accessory COMPACT Air). However in most applications, the ventilation system can operate without any air heater because the heat exchanger has a high temperature efficiency and with the displacement air ventilation principle, the supply air will be slightly cooler than the room air. A special function is also available for reducing the supply airflow if the heat exchanger cannot manage to maintain the temperature required.

After that, the air passes through the built-in silencer and is discharged via the low-velocity air diffuser into the room. The slightly cooler supply air rises around the heat sources, such as the occupants, and presses the room air toward the ceiling.

The Compact Air then sucks in room air via an extract air inlet at the top of the unit. The extract air passes the silencer, filter and heat exchanger and is then discharged through a duct to the open air.



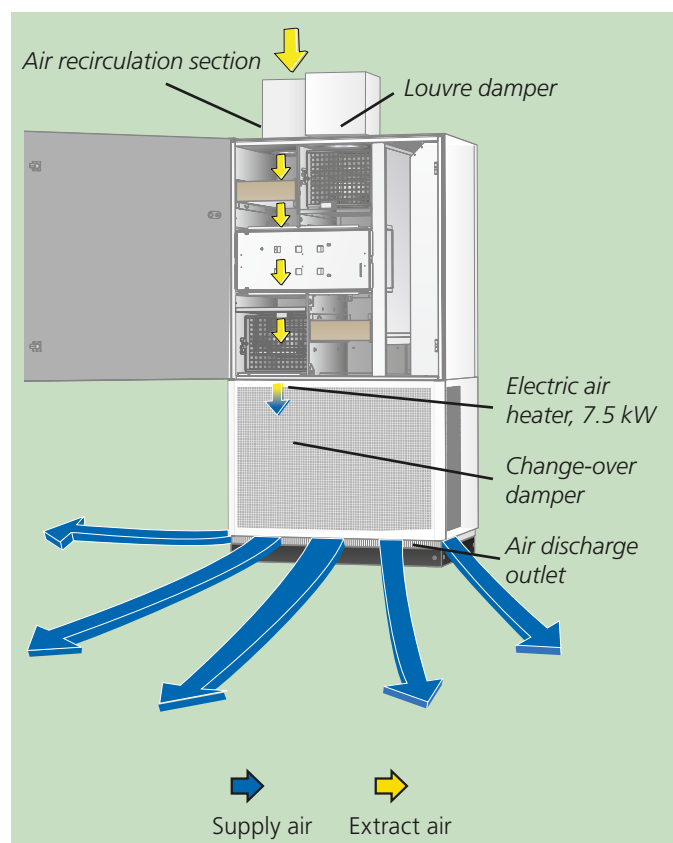
Heating with COMPACT Heat



The COMPACT Heat units, in normal applications, operate like the COMPACT Air units. The BOOSTER function of the COMPACT Heat units can also be used for heating the room. When the room is not in use (for example at night), the room temperature is kept at its lower night-time level. The unit then operates intermittently. Just before the room is to be put to use (for example in the morning), the temperature is increased to normal room temperature.

If the BOOSTER function is used, the extract air fan and the heat exchanger are switched off. The damper in the air recirculation section is reset and the room air is circulated. The louvre damper for exhaust air closes to prevent any cold down draught.

The powerful electric air heater (7.5 kW) heats up the air. A change-over damper in the lower section of the air handling unit is reset and the air is led to the air discharge outlets at the bottom of the unit. The air is discharged at high velocity and follows the floor surface, the so-called coanda effect. This enables long throw lengths and quickly heats the entire premises.



Technical Description of the COMPACT Air & Heat Units

Electrical and Control System

General

The IQnomic control system is completely integrated into the air handling unit. The microprocessor-based equipment controls and regulates temperatures, airflows and other functions. A large number of functions are built into the system and are simple to activate. See the special section entitled "COMPACT Control System".

The air handling unit can be automatically controlled in several ways via the integrated time switch clock (timer), however it can also be demand-controlled via a CO₂ sensor or presence detector. Manual control is also possible.

A large number of functions and settings can be also activated/entered via communication.

Control Inaccuracy:

Temperature $\pm 1^{\circ}\text{C}$.

Airflow $\pm 5\%$.

Power Efficiency

The design and performance of the air handling unit are optimized for achieving excellent power efficiency.

Standards

The air handling units conform to the provisions in the SS-EN 60204-1 Standard.

Interference Level

The air handling units conform to the provisions of the EMC Directive and are tested according to EN 61000-6-2 and EN 61000-6-3 Standards (radiation in residential buildings, office buildings, shops and similar indoor environments and for immunity in industrial facilities).

Use of an earth fault circuit breaker

The earth fault circuit breaker, if required, should only serve the air handling unit and must be of a type designed for use with the control system of the EC motor.

Communication

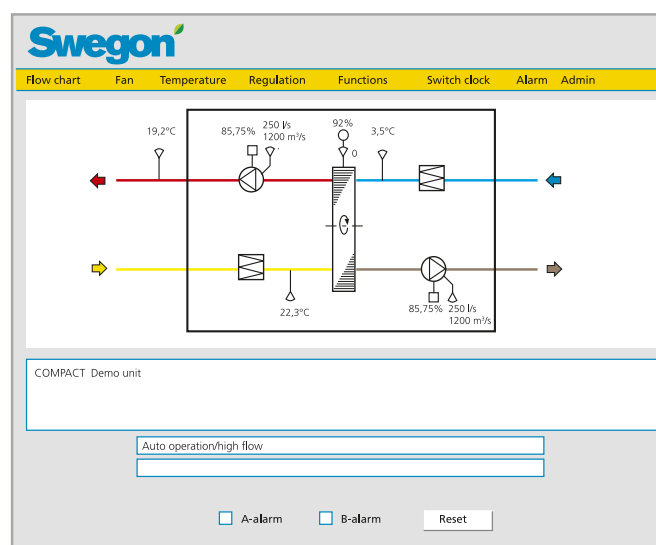
Communication via TCP/IP and EIA 485 is included as standard. The TBLZ Communication unit is used for communication via LON and Trend.

The COMPACT also has built-in web communication. Communication with the COMPACT can be established via an ordinary web browser (such as Internet Explorer) and your own network, i.e. without any main control systems whatever.

In addition to the above, the COMPACT units have inputs and outputs for external functions such as the forwarding of alarms or overtime operation that can be keyed in.



IQnomic control unit.



Typical flow diagram for web communication.

Technical Description of the COMPACT Air & Heat Units

Electrical and Control System

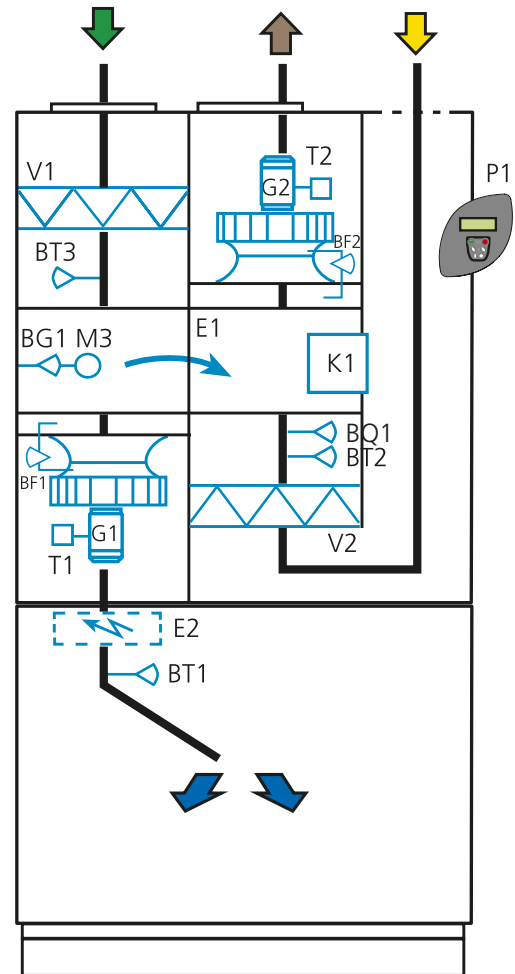
Flow Diagram, COMPACT Air

When you calculate performance data in the ProUnit AHU selection program, the program furnishes a project-specific flow diagram and a description of the unit's functions.

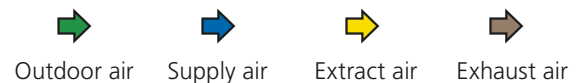
The individual components are specified below.

Components of the COMPACT Air Units

V1	Outdoor air filter.
BT3	Outdoor air temperature sensor. Indicates for control of functions that affect temperature.
E1	Variable speed-controlled RECOmomic rotary heat exchanger.
M3	Step motor for variable speed control of the rotary heat exchanger.
BG1	Rotation monitor sensor for monitoring the heat exchanger's rotation.
G1	Direct-driven supply air fan with EC motor.
T1	Motor control system for variable regulation of the supply air fan
BF1	Flow pressure sensor, supply air. Indicates for control of the supply air fan's speed and monitors the filter status.
E2	Electric air heater (accessory) reheats the supply air if required.
BT1	Supply air temperature sensor. Indicates for control of functions that affect temperature.
V2	Extract air filter.
BT2	Extract air temperature sensor. Indicates for control of functions that affect temperature.
BQ1	VOC sensor Measures the content of emissions/impurities in the room air for regulating the airflow.
G2	Direct-driven extract air fan with EC motor.
T2	Motor control system for variable regulation of the extract air fan
BF2	Extract air flow pressure sensor. Indicates for control of the extract air fan's speed and monitors the filter status.
K1	IQnomic control unit containing control circuit card and other electrical equipment for controlling internal and external functions.
P1	Control panel for setting and reading airflows, temperatures, control functions, in-operation periods, etc. as well as alarms.



COMPACT Air



Technical Description of the COMPACT Air & Heat Units

Electrical and Control System

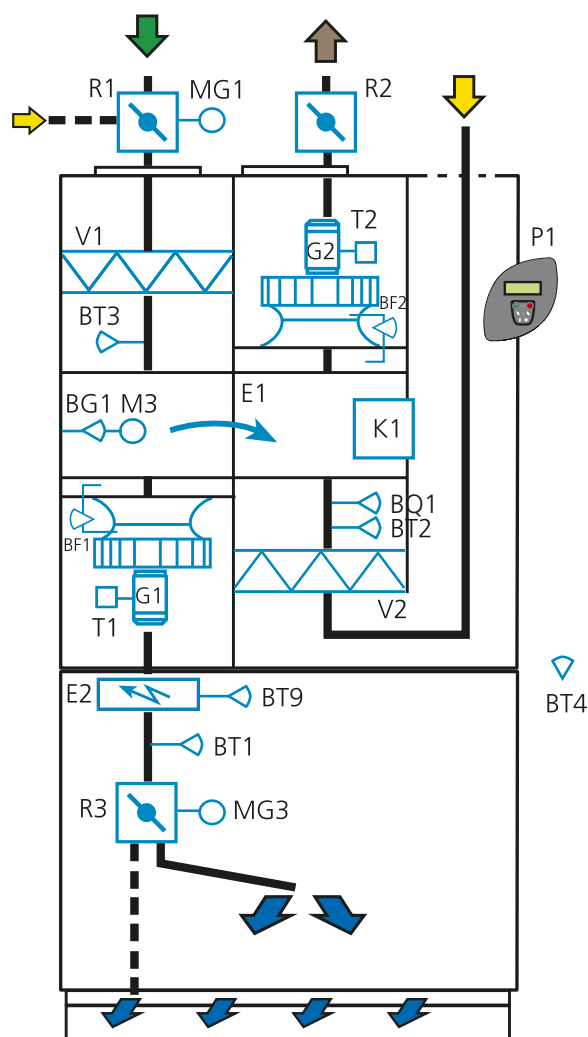
Flow Diagram, COMPACT Heat

When you calculate performance data in the ProUnit AHU selection program, the program furnishes a project-specific flow diagram and a description of the unit's functions.

The individual components are specified below.

Components of the COMPACT Heat Units

V1	Outdoor air filter.
BT3	Outdoor air temperature sensor. Indicates for control of functions that affect temperature.
E1	Variable speed-controlled REConomic rotary heat exchanger.
M3	Step motor for variable speed control of the rotary heat exchanger.
BG1	Rotation monitor sensor for monitoring the heat exchanger's rotation.
G1	Direct-driven supply air fan with EC motor.
T1	Motor control system for variable regulation of the supply air fan
BF1	Flow pressure sensor, supply air. Indicates for control of the supply air fan's speed and monitors the filter status.
E2	Electric air heater.
BT9	Overheat thermostat for the electric air heater.
BT1	Supply air temperature sensor. Indicates for control of functions that affect temperature.
V2	Extract air filter.
BT2	Extract air temperature sensor. Indicates for control of functions that affect temperature.
BQ1	VOC sensor Measures the content of emissions/impurities in the room air for regulating the airflow.
G2	Direct-driven extract air fan with EC motor.
T2	Motor control system for variable regulation of the extract air fan
BF2	Extract air flow pressure sensor. Indicates for control of the extract air fan's speed and monitors the filter status.
K1	IQnomic control unit containing control circuit card and other electrical equipment for controlling internal and external functions.
P1	Control panel for setting and reading airflows, temperatures, control functions, in-operation periods, etc. as well as alarms.



COMPACT Heat



Components for recirculation

R1	The dampers in the air recirculation section close for outdoor air and open for the circulation of room air.
MG1	The air recirculation damper actuators control the dampers in the air recirculation section.
R2	The louvre damper for exhaust air closes when the extract air fan stops.
R3	The supply air changeover damper directs the supply air to the air discharge outlets at the bottom of the unit.
MG3	The supply air changeover damper actuator controls the supply air changeover damper.
BT4	Room temperature sensors measure the temperature in the room. Indicates for control of the heating functions.

Technical Description of the COMPACT Air & Heat Units

Electrical and Control System

Control panel

All the settings and readings can be entered/viewed in plain text and in the language of your choice via a user-friendly control panel on the inspection door.

The control panel has keys for entering the various commands. The display screen and the keys have background lighting. A red indicating LED flashes in the event of an alarm. The preset values are stored and will not be affected in the event of a power failure.

The control panel contains logically composed menus arranged in various levels as follows:

- Main Menu 1. Intended for use by occupants in the room. Only temporary changes can be made, see the specific section below.
- Main Menu 2. An access code is required (obtainable in the maintenance instructions). Selection of automatic or manual operation and switching off the air handling unit.
- User level. Settings and readings for the functions selected.
- Installation level. An access code is required (obtainable in the maintenance instructions). Selection of functions and the setting of limit values.
- Service level. An access code is required (disclosed on completion of special training course).

Settings in Main Menu 1

Main Menu 1 is intended for use by occupants in the room. Only temporary changes can be made as follows:

Normal operation

Indicates that the air handling unit is automatically operating according to the preset settings.

Overtime operation

Can be activated if the room is to be used one evening and the time switch clock (timer) then has controlled the air handling unit to operate at low speed or stop. The fans in the air handling unit will then operate at high speed during the preset period (Factory Setting: 45 minutes).

Airing

Can be activated during a break if there are many occupants in the room. The fans in the air handling unit will then operate at max. speed during the preset period (Factory Setting: 15 minutes).

The functions below apply to COMPACT Heat only.

Heating

Can be activated for increasing the temperature in the room to be put to use. The controller controls the unit's air heater and airflow to meet the load (factory setting: 45 minutes).

Heating + Recirculation

Can be activated if quick heating is desired in the room to be put to use. The air handling unit's controller controls the air heater and airflow to meet the load, the supply of outdoor air is shut off and room air is circulated (factory setting: 45 minutes).



Control panel on the inspection door.

NORMAL OPERATION
OVERTIME OPERATION
AIRING

Possible settings for the COMPACT Air in Main Menu 1.

NORMAL OPERATION
OVERTIME OPERATION
AIRING
HEATING
HEATING + RECIRCULATION

Possible settings for the COMPACT Heat in Main Menu 1.

Installation, COMPACT AIR & Heat

General

Delivery and Scope for Division into Sections

The Compact Air and COMPACT Heat units are always supplied as one unit and on a wooden pallet. To facilitate their transport within the site, the units can be split into upper and lower sections.

The fans and the inspection door in the upper section can also be dismantled. The air distribution grille in the lower section can be dismantled.

Special lifting handles to be secured to the upper section are supplied with the unit.

Duct Connections

Circular 250 mm dia. duct connections for outdoor air and exhaust air are arranged at the top of the air handling unit. The ducts should be insulated according to local standards.

See also the section "Installation Tips" on the next page.

Base Beams with Base Frame

The air handling unit is equipped with 90 mm high base beams. A base frame painted black is supplied in unmounted condition with the unit for assembly at the building site.

Connection to Power Supply

COMPACT Air

The air handling unit is equipped with a 3 metre long power supply cable (measured from the top of the air handling unit) and a mains plug for connection to an earthed electric outlet for a single-phase, 230 V, 10 A mains supply.

COMPACT Heat

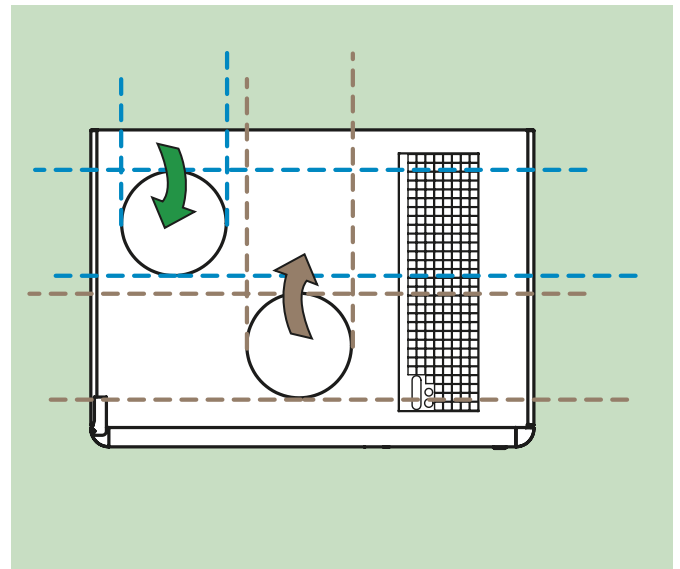
The air handling unit is equipped with a 3 metre long power supply cable (measured from the top of the air handling unit) and a type Perilex 5-pole power supply connector for connection to a corresponding electric outlet for a 3-phase, 400 V, 16 A supply.

Fixed electrical connection

If a fixed electrical connection is required, an external main switch must be fitted.



The air handling units can be split to make easier to transport them within the site.



The duct connections for outdoor air and exhaust air are arranged in such a way that the ducts will not block one another.

Installation, COMPACT AIR & Heat

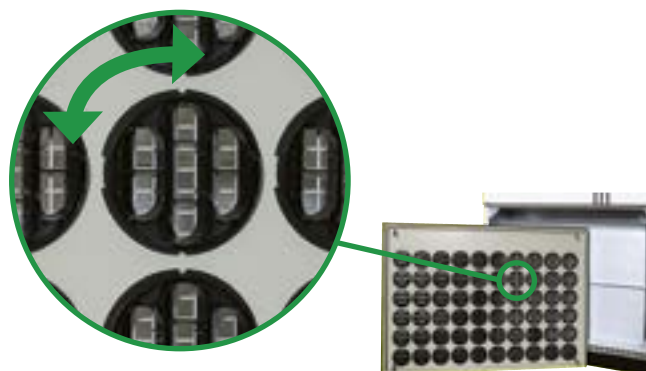
Flexible Air Distribution Pattern

The built-in, low-velocity air diffuser in the COMPACT Air and COMPACT Heat units is equipped with unique VARIZON® discs for the highest degree of comfort and optimal operation. The discs are arranged on the backside of the perforated panel in the lower section of the unit.

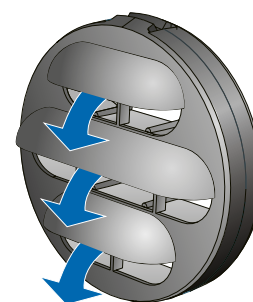
The discs can be turned by hand to the desired position and the extent of the near zone (comfort boundary) can be altered without changing the airflow, pressure drop and the noise level. This flexibility also simplifies any future changes in the way the room is used or changes in its fixtures and furniture.

Since each disc is individually adjustable, the possibilities for modifying the air distribution pattern are practically endless.

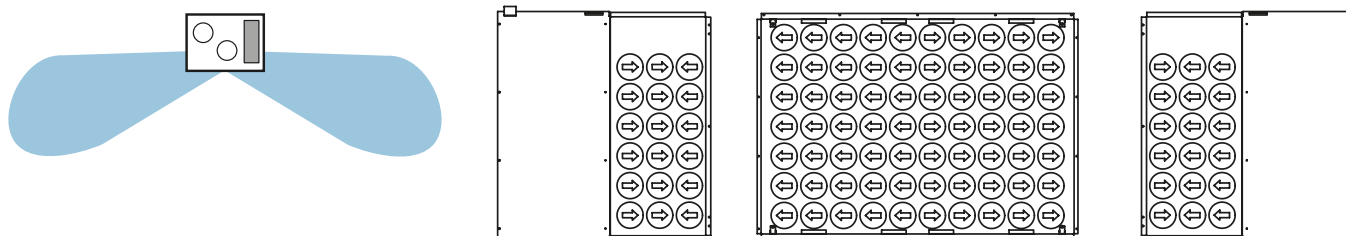
The factory-preset supply air distribution pattern and one example of the possibilities for modifying the air distribution pattern are shown below.



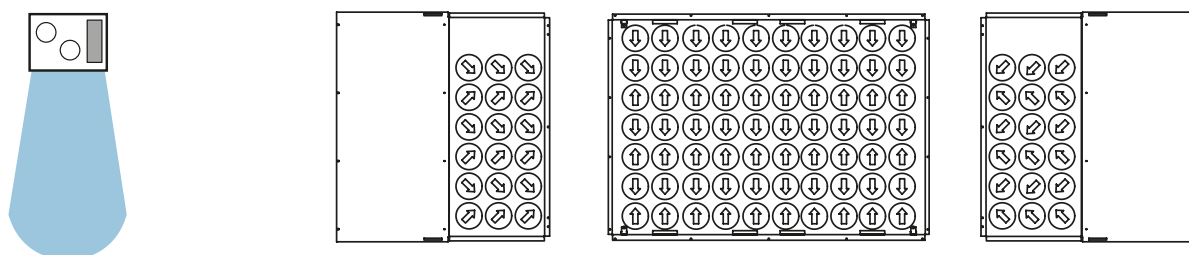
VARIZON® discs.



Factory-preset air distribution discharged to the sides respectively.



Example of the distribution of air discharged forward.



Installation, COMPACT AIR & Heat

Installation Tips

Sizing the Duct System

To achieve optimal operating economy and low noise level it is important to design/install the ventilation system with as low pressure drop as possible. Therefore the designer should aim at designing ducts that are as short as possible and incorporate as few duct bends as possible.

The duct connections on the COMPACT Air unit are arranged so that ducts, with a 90° bend, including 30 mm thick insulation, can be run in any direction without blocking one another. The ducts to the COMPACT Heat are to be connected to the air recirculation section and louver damper.

Sizing the Heating System

The supply of air that has a temperature that is slightly below the temperature in the room presupposes that the room has an additional heating means. A special function is also available for automatically reducing the supply airflow if the heat exchanger cannot manage to maintain the temperature required.

The consequence of a decrease in supply air flow is sub-atmospheric pressure in the room. Outdoor air is then instead sucked in through untight spots in windows and doors, for instance. This outdoor air must be heated by the normal heating system of the building, which also must be sized/preset to take these conditions into account.

As an alternative, an air heater can be selected as a COMPACT Air accessory (included as standard for COMPACT Heat units).

Extract Air from Several Rooms

By employing the extract air connection piece accessory, the extract air can also be taken from rooms other than where the COMPACT room unit is placed. If the temperature in this/these room(s) substantially differs from the room where the COMPACT Air unit is placed, the room sensor accessory should be used. The room sensor replaces the air handling unit's regular extract air temperature sensor and should be located where the most representative room temperature is to be found.

Transfer Air

Transfer air grilles or door slots to adjacent rooms have a strong influence on the system's performance.

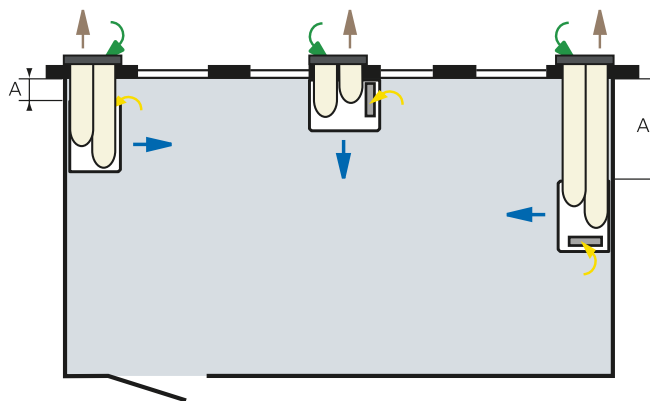
Air transfer grilles positioned low or door slots enable the transfer of fresh air to adjacent rooms as well. This effect may be desirable, but there is also risk that the ventilation in the room where the unit is placed will be insufficient.

Air transfer grilles positioned high involve the risk that contaminated air will be transferred to adjacent rooms. However, the ventilation will not be impaired in the room where the unit is placed.

Normal Installation for One Room

The illustration below shows three different possible ways to arrange the COMPACT units. The runs of ducting will be shortest if the air handling unit can be located against an outside wall.

The distance between the unit's side and wall (A) must be at least 400 mm in order to avoid acoustical problems.



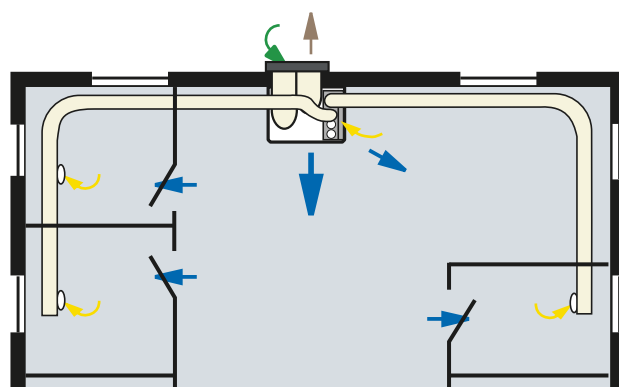
Alternative Locations in the Room

Installation for Several Rooms

The Compact Air unit can convey supply air to several rooms via door slots or transfer air grilles.

Extract air can also be taken from other spaces via ducting and the extract air connection piece accessory.

A professional should be engaged for both project design and installation.



Supply air to several rooms via doors with an air slot at the bottom. Extract air from adjacent rooms via ducts and the extract air connection piece accessory.



Accessories, COMPACT AIR & Heat

TBHF External wall hood

For the admission of outdoor air and the discharge of exhaust air. The exhaust air is horizontally discharged through a circular wire mesh grille at the front of the hood. Outdoor air is taken in through a wire mesh grille at the bottom of the hood. This design effectively prevents short-circuit airflow between the outdoor air/exhaust air.

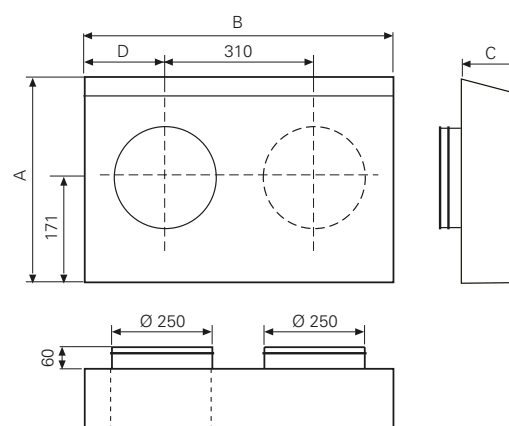
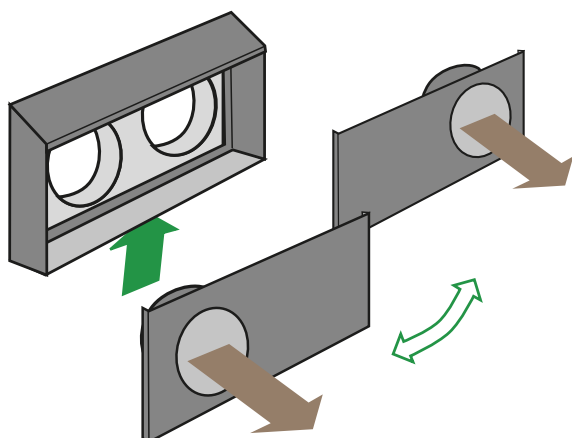
Available in two variants, with or without acoustic insulation.

Technical Data

Made of aluminium-zinc plated sheet steel painted dark grey, RAL 7021 (equivalent to NCSS 8502-B), Environmental Class C4.

Installation

The 250 mm dia. connections are fitted with rubber seal rings. When you cut an opening in a wall, bear in mind that the ducts must be insulated with at least 30 mm thick insulation and be lined with a damp-proof external material. The front panel of the external wall hood can be lifted off (after removing its screws), reversed and resecured. This makes the duct connections for exhaust air and outdoor air optional.



TBHF	A	B	C	D
Without acoust. insul.	440	683	167	185
With acoust. insul.	470	830	220	260

CACZ Cover plate

Designed to conceal the duct connections arranged from the top of the air handling unit. Several cover plates can be stacked on one another.

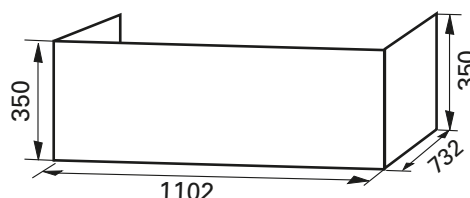
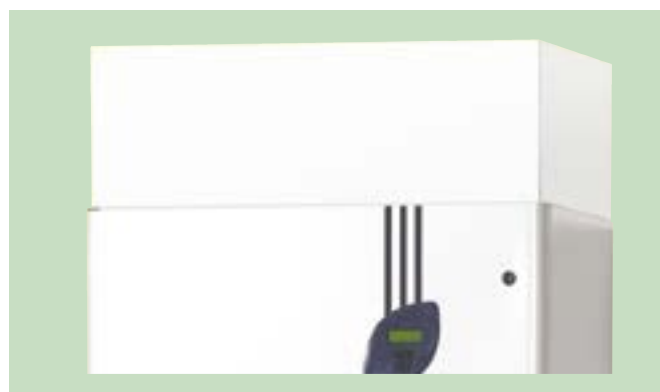
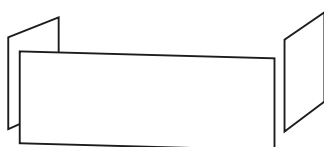
Technical Data

The cover plates are painted in the same colour as the Compact Air or COMPACT Heat unit.

Installation

The cover plates consist of three sections (end pieces + long side) to be assembled together. If ducts are run to the side, an opening must be made for the ducts.

At least 30 mm open space to the ceiling must be provided.



Accessories, COMPACT AIR & Heat

CACZ Extract air connection piece

For ventilating rooms in addition to the room where the COMPACT Air or COMPACT Heat unit is located.

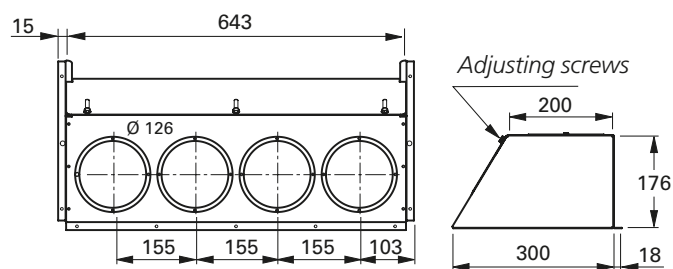
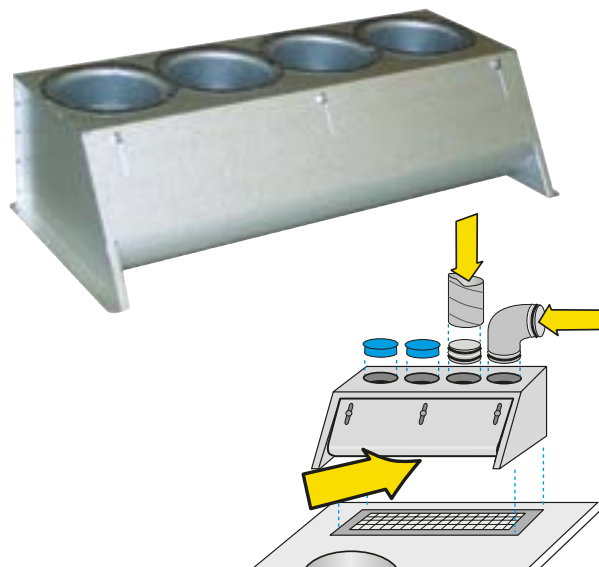
Technical Data

Has four 125 mm dia. circular duct connections for extract air from other rooms and a rectangular opening for extract air from the same room where the unit is placed. The rectangular opening is flexible for adjusting the air-flows.

Installation

To be secured by screws over the air handling unit's regular extract air inlet. Duct bends fit directly into the duct connections. Spiral insertion joints are required for connecting straight ducts. The connections that are not used should be blanked off by a cover.

Duct components are not included in the supply.

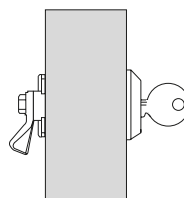


TBLZ Door lock

For use where more stringent demands on security are made as opposed to locking with a standard special key. Supplied as a set of 2 locks with key.

Installation

Supplied loose for changing the existing lock at the building site.



TBSA Damper

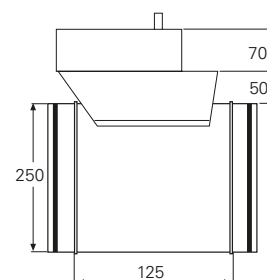
Designed for preventing cold draughts while the air handling unit is switched off. The IQnomic controls the operation of the damper.

Technical Data

Complete with damper actuator for 230 V. The actuator can be selected with spring return or on/off actuation. Tightness Class 3 to EN 1751 Standard.

Installation

Is fitted with a rubber seal ring and can be mounted either in a horizontal or a vertical duct. Connect the controls and power supply to the air handling unit's control unit.



Accessories, COMPACT AIR & Heat

TBLZ Louvre damper

Applicable to COMPACT Air only. Included as standard for COMPACT Heat units.

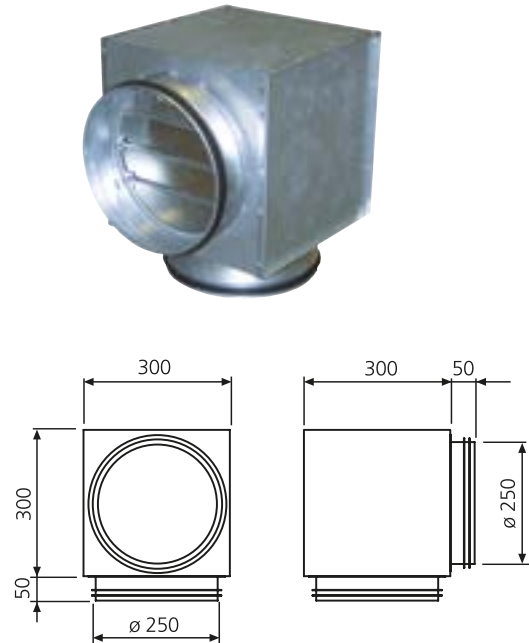
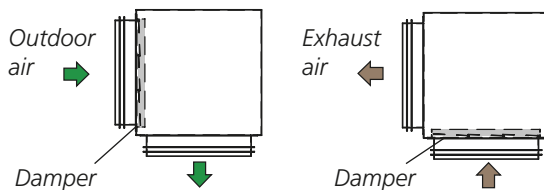
Designed for preventing cold draughts while the air handling unit is switched off.

Technical Data

The damper blades in the louvre damper are opened by the air pressure when the fans in the room unit are operating and automatically close when the fans are idle.

Installation

Is fitted with a rubber seal ring and is mounted directly on the exhaust air and/or outdoor air connection as illustrated to the right.



TBLE Electric air heater

Applicable to COMPACT Air only. Air heater, 7.5 kW, is included as standard for COMPACT Heat units.

For reheating supply air.

Technical Data

Capacity: 1170 Watt The overheat protection is included.

Installation

Supplied loose for installation at the building site. To be located at prepared place inside the air handling unit. Connect the controls and 230 V power supply to the air handling unit's control unit.



TBKA, TBKC Air cooler

For cooling supply air.

The COMPACT Air and the COMPACT Heat systems can be equipped with air cooler in the outdoor air duct upstream of the air handling unit. The air handling unit's control unit has ready-to-use cooling functions to activate.

TBKA (water) or TBKC (direct expansion) air coolers are recommended. See description in the section entitled: Accessories, in the chapter entitled: COMPACT Unit & Top.



Accessories, COMPACT Air & Heat

Electrical and Control Equipment

Presence detector

For controlling high and low speed operation instead of the room unit's built-in timer. As soon as the sensor registers the presence of an occupant in the room, the air handling unit is controlled to the high speed mode; when there are no occupants, to the low speed mode.

To be connected via appropriate terminals on the control unit.

Air Quality Sensor

For controlling high and low speed operation instead of the room unit's built-in timer. The air quality sensor registers the carbon dioxide content in the room air and the control unit regulates the airflow required within preset limits.

To be connected via appropriate terminals on the control unit.

Room sensor

For use when the room unit's built-in extract air temperature sensor does not provide representative values. Can for example be required when the extract air is taken from adjacent rooms by means of the extract air connection piece accessory.

Designed for wall-mounting and is available for Enclosure Class IP 20. To be connected to appropriate terminals on the control unit.

Timer

For time-limited overtime operation when the room unit's built-in time switch has controlled the room unit to operate in the low speed mode or to stop. For strap-on mounting.

To be connected via appropriate terminals on the control unit.

Pushbutton

For overtime operation when the room unit's built-in time switch has controlled the room unit to operate in the low speed mode or to stop. For strap-on mounting. Can be selected with or without indication.

To be connected via appropriate terminals on the control unit.

SD card

For program transmissions and logging.

Transformer, 230/400 V

For connecting the COMPACT Heat unit to 230 V mains power supply, 11 kVA.

IQnomic Plus

The extra functions for which the inputs and outputs are not included as standard in the room unit's control unit, for example external monitoring and cooling.

TBLZ Communication Unit

For communication via LON FTT-10 – Lon Works and Trend (communication via TCP/IP and EIA 485 as well as via internal webserver is standard in the COMPACT).

To be connected to the communication port of the control unit.

Specification, COMPACT Air & Heat

Air handling unit

Air handling unit, COMPACT Air

Size	02	= 02		CA-aa-B-1-1	= 03
		03			

Air handling unit, COMPACT Heat

Size	02	= 02		CH-aa-B-1-1	= 03
		03			

Electrical and Control Equipment

Communication unit

For interface:				TBLZ-3-1-a-41
LON FFT-10	= 1			
Trend	= 2			

Room sensor

For wall mounting. Enclosure Class IP 20.

TBLZ-1-24-2

Timer

0-2 hour prolonged operation

ELQZ-1-406-a

Version:				
For strap-on mounting	= 1			

Pushbutton for prolonged operation

Version:				ELQZ-2-455-a-b
For surface mounting	= 1			
Without indicating LED	= 0			
With indicating LED	= 1			

Presence detector

TBLZ-1-56

Air quality sensor, room

ELQZ-2-504

SD card

Flash card for program transmissions and logging

TBLZ-1-62-a

Version:				
Without COMPACT program	= 1			
With COMPACT program	= 3			

Transformer, 230/400 V

For connecting the COMPACT Heat unit to a 230 V mains power supply, 11 KVA.

TBLZ-2-11-11

IQnomic Plus

Functional module and connection cable

TBIQ-2-1-aa

Version:		
0.25 m	= 00	
1 m	= 01	
3 m	= 03	
5 m	= 05	
10 m	= 10	
15 m	= 15	

Modular/terminal adaptor

TBLZ-1-55

Accessories

External wall hood

Combination hood for outdoor air/exhaust air

TBHF-2-0025-b

Insulation	Without	= 0		
	With	= 1		

Cover plate

CACZ-2-07

Extract air connection piece

Connection of Extract Air from Several Rooms

CACZ-2-06

Door lock

Set of two door locks with key.

TBLZ-1-57

Damper with motor

Tightness Class 3, 250 mm dia. duct connection
Uninsulated damper blades

TBSA-1-000-025-1-a

Damper motor:				
With spring return	= 1			
On/off	= 2			

Louvre damper

(applicable to COMPACT Air only)

TBLZ-1-54

Electric air heater, COMPACT Air

1.17 kW for installation in COMPACT Air system.

CALE-2-01

Air cooler, for chilled water

Capacity variant 1. 250 mm dia. duct connection

TBKA-4-000-031-1

Air cooler, for chilled water

Capacity variant 2. 315 mm dia. duct connection

TBKA-4-000-031-2

Valve set, cooling and heating

2(3)-way valve including actuator.

TBVA-1-aaa

Valve size:	
Kvs 0.25	= 002
Kvs 0.40	= 004
Kvs 0.63	= 006
Kvs 1.0	= 010
Kvs 1.6	= 016
Kvs 2.5	= 025
Kvs 4	= 040
Kvs 6.3	= 063

Air cooler, direct expansion

Duct connection size, 315 mm dia. 1 section.

TBKC-4-000-031-1-1

Replacement Material

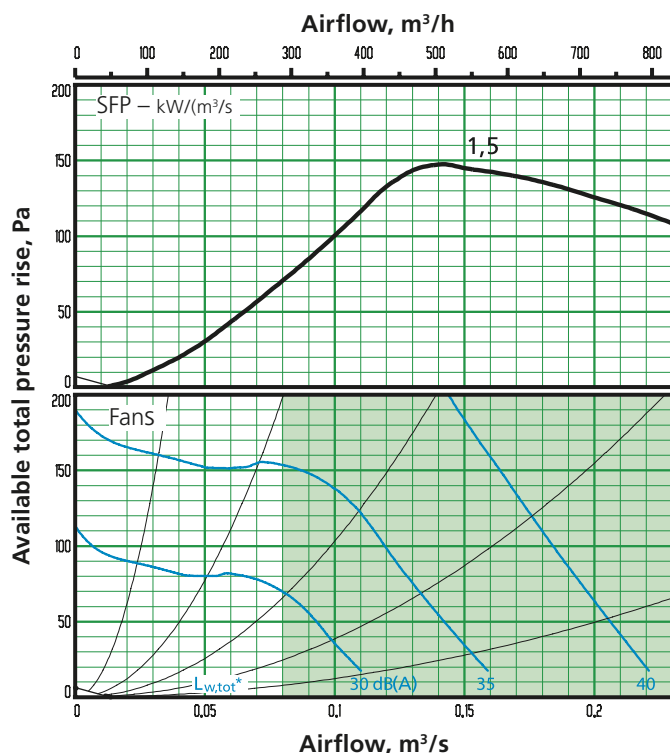
Set of filters, pleated filter, COMPACT

For supply air and extract air

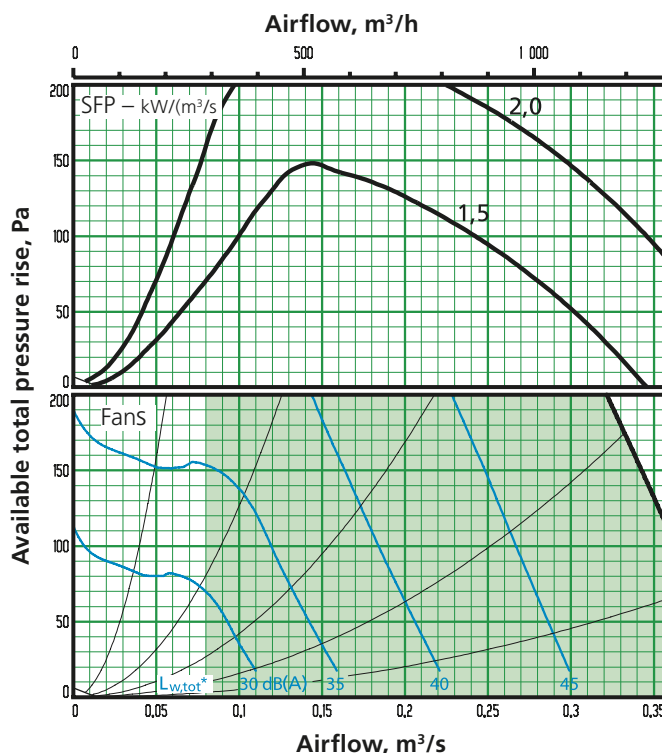
TBFZ-1-07

Sizing

COMPACT AIR, size 02



COMPACT AIR, size 03



Acoustic Calculations

*) $L_{w,tot}$ in the diagram above refers to the total sound pressure level in dB(A) to the room. Using the correction factors in the table below, $L_{w,ok}$ can be calculated in a linear plane, dB.

The sound pressure level (the sound we experience) in a public assembly hall is, as a rule, 10-15 dB lower. The sound pressure level can be calculated by taking the characteristics of the room into account (volume and sound absorption), the location of the room unit and the distance to the room unit. See also the Technical Information Section in this catalogue.

Correction factors K_{OK}

Sound path	Octave band, No. / mid-frequency, Hz							
	1	2	3	4	5	6	7	8
	63	125	250	500	1000	2000	4000	8000
To outdoor air duct	28	28	12	5	-4	-14	-18	-18
To exhaust air duct	32	31	28	24	22	24	21	19
To room unit's surroundings	15	11	0	-3	-10	-14	-17	-20

Min. and Max. Airflows, COMPACT Air

The tabulated flows are those that are possible to set. The practical flow limits are determined by the external pressure drop.

COMPACT AIR	Min. airflow		Max. airflow	
	m³/h*	m³/s	m³/h*	m³/s
02	300	0.08	800	0.23
03	300	0.08	1300	0.36

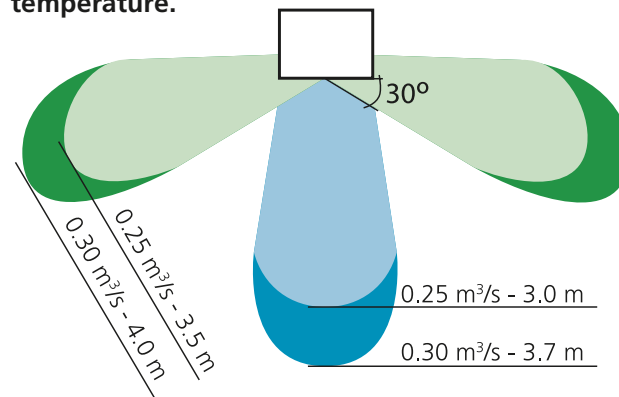
* When adjusting the flow, round off the value to the nearest settable step.

Near Zone

The term "near zone" refers to the zone nearest to the room unit where the air velocity is greater than 0.2 m/s and where occupants may feel discomfort.

The near zone declines as the difference between the room unit's supply air temperature and the room temperature becomes smaller. The near zone can be steered to extend in various directions by resetting the direction of air discharge in the supply air diffuser section of the room unit. This is done by turning the discs behind the front grille to the direction required.

Near zone with supply air 2°C lower than room temperature.



Green-shaded area: Near zone with discs positioned for air discharge from each side (delivery version).

Blue-shaded area: Near zone with discs positioned for forward air discharge.

Sizing

COMPACT Air

Delivery and Transport within the Site

The air handling unit is produced in one variant in which all the components are arranged at their given physical locations inside the unit.

The air handling unit is delivered on a wooden pallet. The base frame and possible accessories are supplied in unmounted condition.

The air diffuser section can be separated from the main unit section for transporting them within the building site. The inspection door and the fans can also be dismantled from the unit.

Electrical Data

Minimum power supply

1-phase, 3-wire, 230 V -10/+15%, 50 Hz, 10 AT.

The room unit is equipped a 3 m long cable (measured from the top of the unit) and a mains plug.

If a fixed electrical connection is required, an external main switch must be fitted.

Rated data per fan

Size 02: 1 x 230 V, 50/60 Hz, 0.5 kW (0.28 kW)*

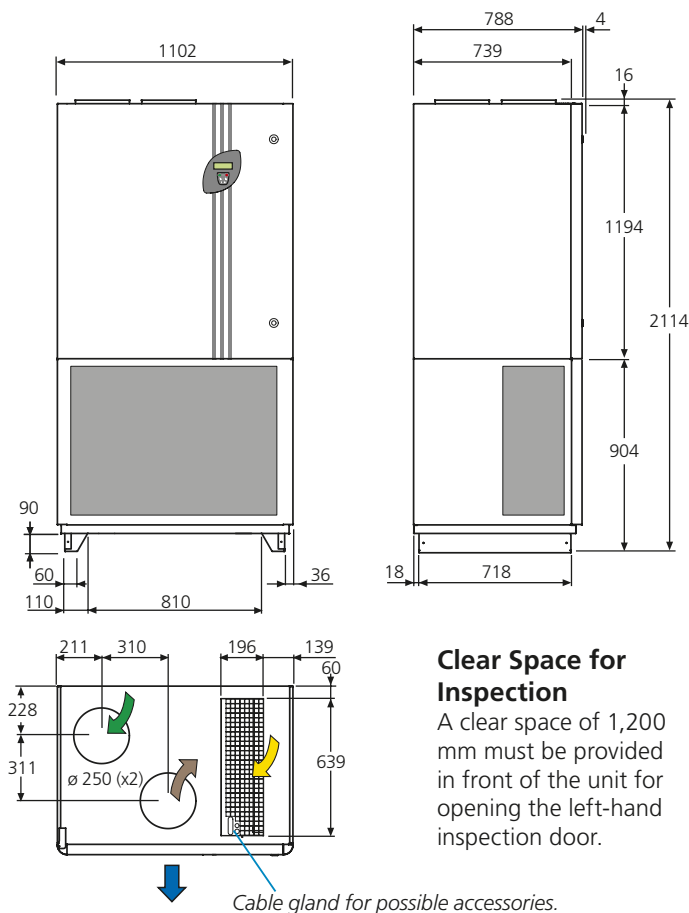
Size 03: 1 x 230 V, 50/60 Hz, 0.5 kW (0.43 kW)*

*) The motor control system limits the output power to the value specified.

Rated data for the heat exchanger drive motor

Step motor, 3-phase, 5.8 A (2A)*, 62 V max 90 V.

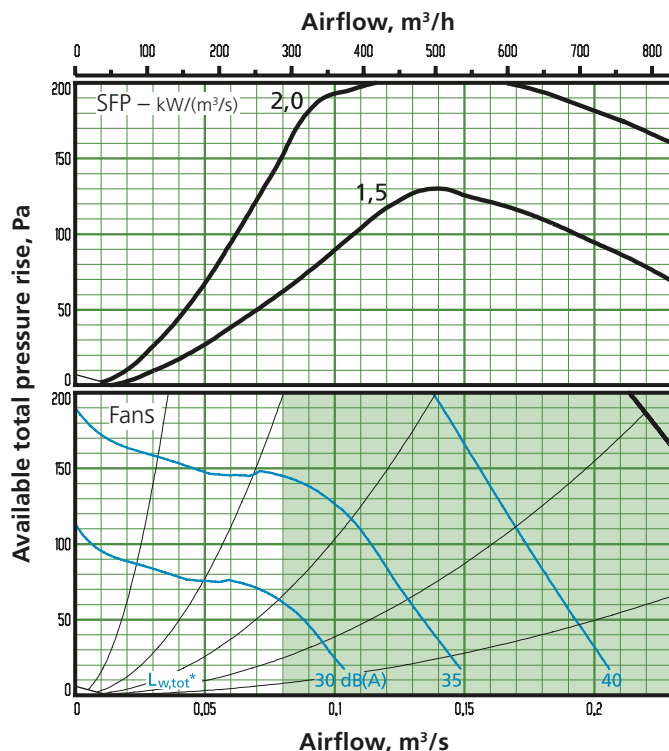
*) The motor control system limits the output power to the value specified.



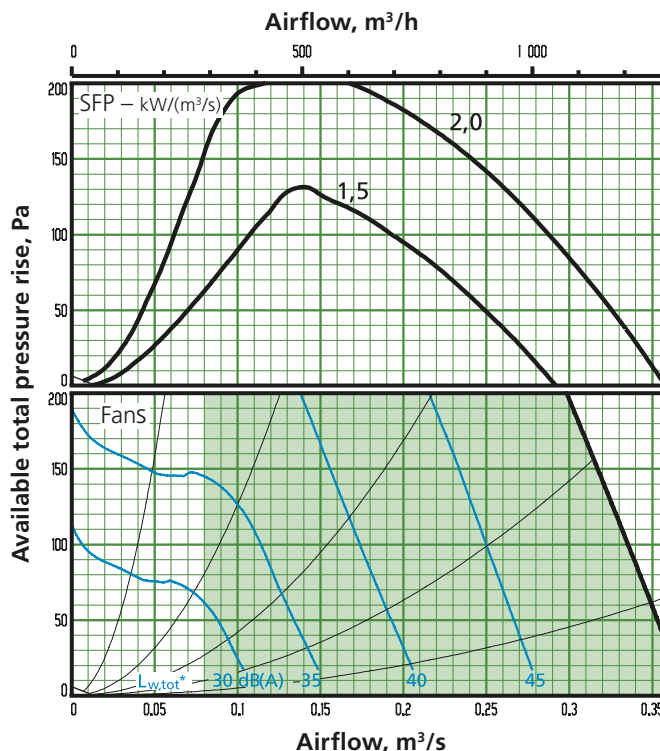
COMPACT Air	Weight, kg		
	Unit section	Air diffuser section	Total
02	214	117	331
03	214	117	331

Sizing

COMPACT Heat, size 02



COMPACT Heat, size 03



Acoustic Calculations

*) $L_{w,tot}$ in the diagram above refers to the total sound pressure level in dB(A) to the room. Using the correction factors in the table below, $L_{w,ok}$ can be calculated in a linear plane, dB.

The sound pressure level (the sound we experience) in a public assembly hall is, as a rule, 10-15 dB lower. The sound pressure level can be calculated by taking the characteristics of the room into account (volume and sound absorption), the location of the room unit and the distance to the room unit. See also the Technical Information Section in this catalogue.

Correction factors K_{ok}

Sound path	Octave band, No. / mid-frequency, Hz							
	1	2	3	4	5	6	7	8
	63	125	250	500	1000	2000	4000	8000
To outdoor air duct	27	27	11	4	-5	-15	-19	-19
To exhaust air duct	32	31	28	24	22	24	21	19
To room unit's surroundings	14	11	0	-3	-10	-14	-17	-20

Min. and Max. Airflows, COMPACT Heat

The tabulated flows are those that are possible to set. The practical flow limits are determined by the external pressure drop.

COMPACT Heat	Min. airflow		Max. airflow	
	m³/h*	m³/s	m³/h*	m³/s
02	300	0.08	800	0.23
03	300	0.08	1300	0.36

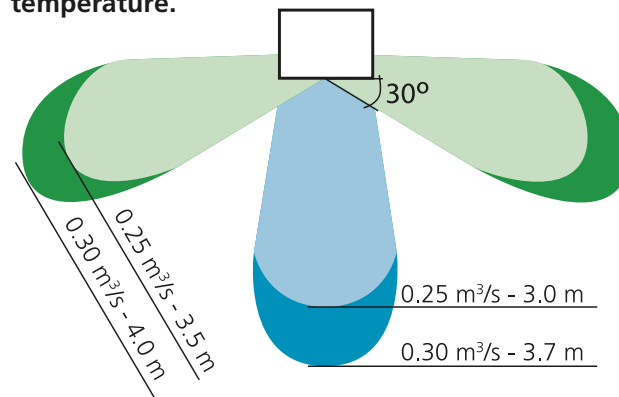
* When adjusting the flow, round off the value to the nearest settable step.

Near Zone

The term "near zone" refers to the zone nearest to the room unit where the air velocity is greater than 0.2 m/s and where occupants may feel discomfort.

The near zone declines as the difference between the room unit's supply air temperature and the room temperature becomes smaller. The near zone can be steered to extend in various directions by resetting the direction of air discharge in the supply air diffuser section of the room unit. This is done by turning the discs behind the front grille to the direction required.

Near zone with supply air 2°C lower than room temperature.



Green shaded area: Near zone with discs set for air discharge from each side (delivery version).

Blue-shaded area: Near zone with discs set for forward air discharge.

Sizing

COMPACT Heat

Delivery and Transport within the Site

The air handling unit is produced in one variant in which all the components are arranged at their given physical locations inside the unit.

The air handling unit is delivered on a wooden pallet. The base frame and possible accessories are supplied in unmounted condition.

The air diffuser section can be separated from the main unit section for transporting them within the building site. The inspection door and the fans can also be dismantled from the unit.

Electrical Data

Minimum power supply

3-phase, 5-wire cable (3x400+N+PE), 400 V -10/+15%, 50 Hz, 16 AT.

The room unit is equipped a 3 m long cable (measured from the top of the unit) and a 5-pole type Perilex power supply connector.

If a fixed electrical connection is required, an external main switch must be fitted.

Rated data per fan

Size 02: 1 x 230 V, 50/60 Hz, 0.5 kW (0.28 kW)*

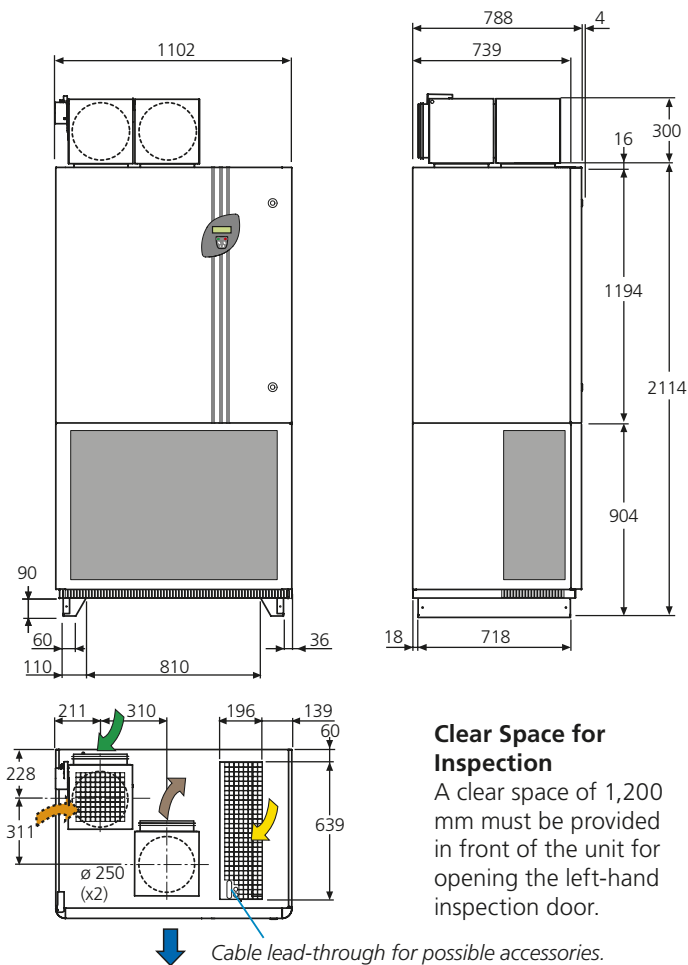
Size 03: 1 x 230 V, 50/60 Hz, 0.5 kW (0.43 kW)*

*) The motor control system limits the output power to the value specified.

Rated data for the heat exchanger drive motor

Step motor, 3-phase, 5.8 A (2A)*, 62 V max 90 V.

*) The motor control system limits the output power to the value specified.



Clear Space for Inspection

A clear space of 1,200 mm must be provided in front of the unit for opening the left-hand inspection door.



COMPACT Heat	Weight, kg		
	Unit section	Air diffuser section	Total
02	221	124	345
03	221	124	345

